MAIS 202 Project Deliverable 3

Yuliya Shpunarska (yuliya.shpunarska@gmail.com)

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1. Final Training Results

I have changed my project aim since the last deliverable, so the model is necessarily pretty different. The model currently consists of a convolutional base (a pre-trained VGG16 model) with a support vector classifier on top, to classify paintings according to their artist. The results have improved in the sense that I have results, but the accuracy is still lacking: I have a 46% testing accuracy. Unfortunately, due to the small dataset (between 100 and 800 paintings per artist), I chose to not have a validation set, but that can be changed with more intense data augmentation. I hope to tweak some hyperparameters in the next two weeks to improve this.

Currently, the two strategies that I use for improving performance are data augmentation (scaling, flipping, zooming), class weighting (due to the imbalanced dataset), and preprocessing the images with the base CNN's mean and standard deviation values.

See figure 1 for the confusion matrix of this model. Despite the weighting of the classes, it is still harder for the model to predict uncommon classes. This confusion matrix is normalized according to the true class.

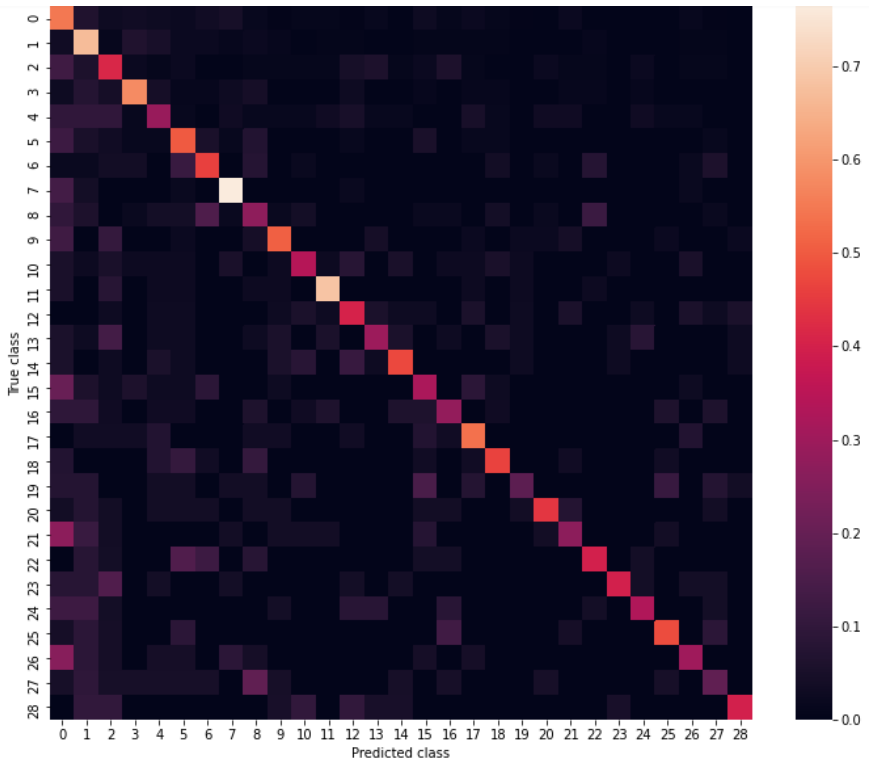

Figure 1: Convolution matrix for the 29 artists with more than 100 paintings in the original dataset.

2. Final demonstration proposal

For my final project, I intend to make a simple webapp with Flask, including a simple landing page with a place to upload a custom image to classify according to the artist, and some information on the model (specifically, a list of artists that can be predicted). If I get the chance to expand the webapp, I can add a premade neural transfer model, the output of which can be fed into the classifier that I made.

I have already attended the workshop and it gave me ideas on how to implement it, but I will need to follow the Flask documentation to be able to make a working webapp. I have a little bit of experience with HTML and CSS so I hope to make it visually appealing as well.